Mathematics: Pure Mathematics 20
Grade: 10, 11, 12
Basic

Student and teacher: Use this cover sheet for mailing

ASSIGNMENT BOOKLET

MAT 2037 Pure Mathematics 20
Module 2

FOR STUDENT USE ONLY	
Date Module Submitted: _____ Time Spent on Module: _____	(If label is missing or incorrect) File Number: _____ Module Number: _____

FOR TEACHER USE ONLY

Assigned Teacher: _____

Module Grading: _____

Graded by: _____

Date Module Received:

_____

Module Assignment Recorded: _____

Student's Questions and Comments

Apply Module Label Here

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Teacher's Comments

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Teacher

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- Are all the assignments completed? If not, explain why.
- Has your work been reread to ensure accuracy in spelling and details?
- Is the booklet cover filled out and the correct module label attached?

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Pure MATHEMATICS 20

Module 2

Equations and Inequalities

Assignment Booklet

Learning
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Summary

	Total Possible Marks	Your Mark
Section 1 Assignment	40	
Section 2 Assignment	20	
Final Module Assignment	40	
	100	

Teacher's Comments

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Parents	
General Public	
Other	

Pure Mathematics 20
Assignment Booklet
Module 2
Equations and Inequalities
Learning Technologies Branch
ISBN 0-7741-1558-0

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ASSIGNMENT BOOKLET
PURE MATHEMATICS 20 – MODULE 2:
EQUATIONS AND INEQUALITIES

Your mark on this module will be determined by how well you do your assignments in this booklet.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate section.

There are two section assignments and one final module assignment in this Assignment Booklet. The total value of these assignments is 100 marks. The value of each assignment is stated in the left margin.

Be sure to proofread each assignment carefully.

(40)

Section 1 Assignment: Solving Linear Equations

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

(5)

1. Solve the following system of equations using the elimination method. Check your answer.

$$2x - 3y = 13 \quad (1)$$
$$7x + 3y = 32 \quad (2)$$

(5) **2.** Solve the following system of equations using the substitution method. Check your answer.

$3 = 5x - 3y + 10$ (1)

$y = 2x + 4$ (2)

(5)

3. Solve the following system of equations using either the substitution method or the elimination method. Check your answer.

$16 = 7y - 10x$ (1)

$7y = 6x + 18$ (2)

(5)

4. Solve the following system of equations using either the substitution method or the elimination method. Check your answer.

$5y - 3x = -20$ (1)

$3x - 3y = 14$ (2)

(4)

5. Two students, Codi and Kent, teamed up to solve a system of linear equations—Equations 1 and 2. Codi made a table of values for equation 1, and Kent made one for equation 2. Here are the results:

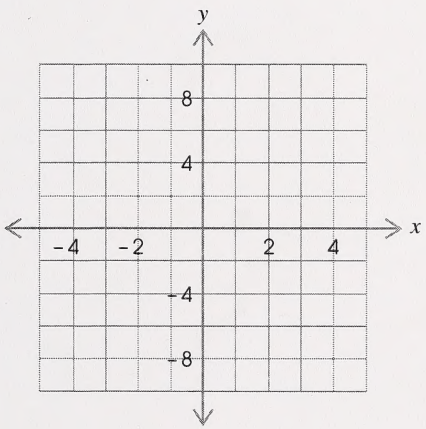
Equation 1

x	−3	−1	1	3
y	9	4	−1	−6

Equation 2

x	−2	−1	0	2
y	6.5	4	1.5	−3.5

Using the students' results, what is the solution to this system of equations? Show all your work.



(5) **6.** Solve the following system of equations. Check your answer.

$$7x + 4y = -2 \quad (1)$$
$$10x - 3y = 32 \quad (2)$$

(6)

7. Pat invested $1200 at the beginning of the year. She placed the money in two types of bonds: one paying interest at 4% per annum and the other paying 6% per annum. At the end of the year, Pat's investment had grown to a value of $1255. Pat had misplaced some of her records and was wondering how much she had invested in each type of bond.

Using a system of equations, determine how much Pat had invested in each type of bond.

(5) **8.** Solve the following system of equations. Check your answer.

$$4y+6z=-2x-13 \quad (1)$$
$$5y+2z=-13 \quad (2)$$
$$y+2=0 \quad (3)$$

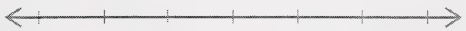
20

Section 2 Assignment: Solving Linear Inequalities

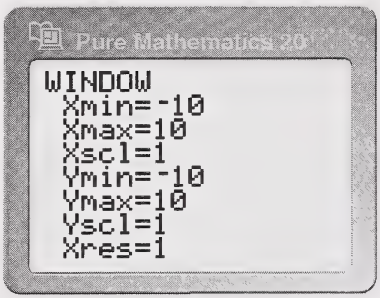
Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

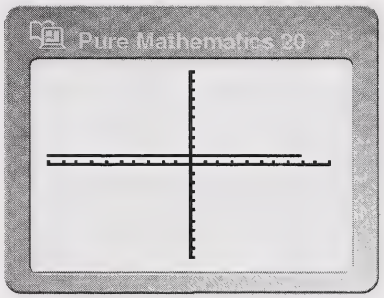
(3) **1.** $\frac{1}{4}x - \frac{1}{2}x \geq 3$

Solve the inequality and sketch your solution on the number line. Use a test value to check your solution.



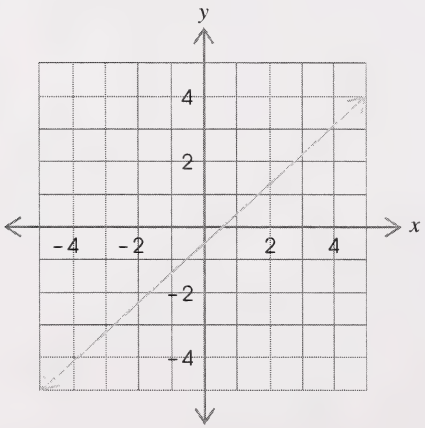
(3) **2.** The following displays are from a graphing calculator a student is using to graph an inequality.





From the displays, infer an inequality the student could be graphing. Explain your answer.

(3) **3. a.** The boundary line for the inequality $\frac{3x}{5} < \frac{2y}{3} + \frac{1}{3}$ is shown on the coordinate plane. Complete the graph by inserting the proper boundary line (solid or dotted) and by shading the correct half-plane.



(1) **b.** Explain why you chose to make the boundary line solid or dotted.

(1)

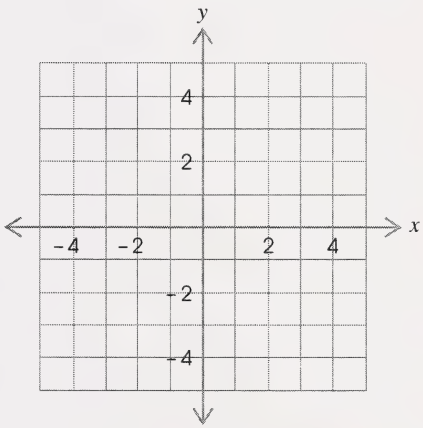
c. Explain how you determined which half-plane to shade.

_____

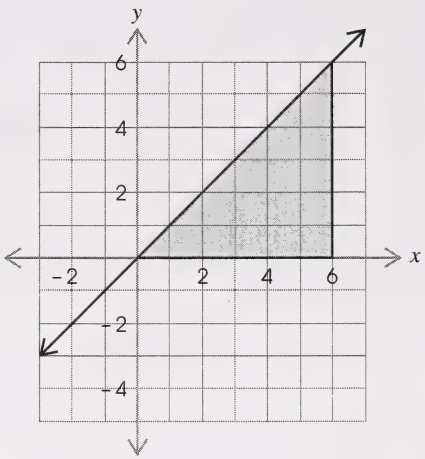
_____

(5)

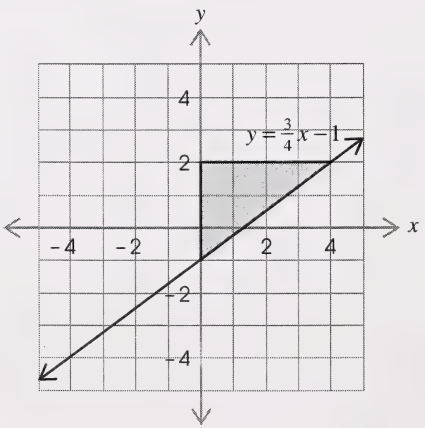
4. Graph the inequality $2x - 3y + 4 \geq 3$ on the grid provided; then use two test points to check the graph.



(2) **5.** The graph given shows the inequality $y \leq x$, with a restriction on one or both of the variables. Describe the restriction relating to the variables. Explain your answer.



(2) **6.** The graph given shows the boundary line of the inequality $y \geq \frac{3}{4}x - 1$. What are the restrictions on the x- and y-values that confine the graph to the shaded region?



(40)

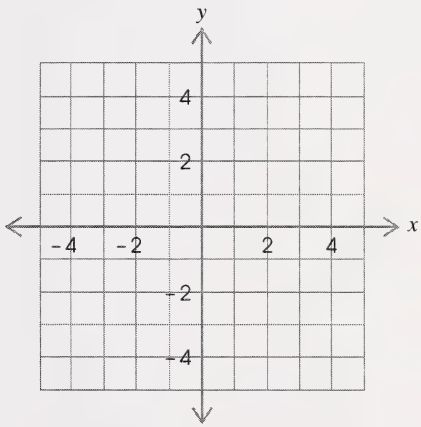
Final Module Assignment

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

(5)

1. a. Graph the region corresponding to the following compound inequality:

$$-1 \leq x \leq 3$$
$$0 \leq y \leq 2$$



(4)

b. Use two test points from the region to check whether the shading is correct.

(6)

2. Brandon and Pat drove from Edmonton to Saskatoon, a distance of 545 km. Brandon drove the first part of the trip at an average speed of 100 km/h, and Pat drove the remainder at an average speed of 90 km/h. If the trip took Brandon and Pat 5.75 h, determine the number of hours each drove. Show all your work.

(4) **3.** Solve the following system of equations using an algebraic method. Check your answer.

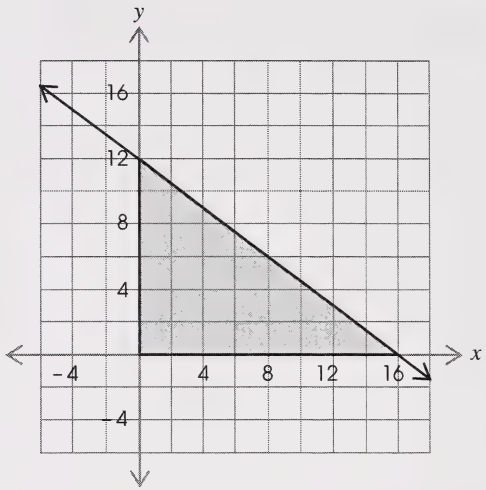
$3x = -12$ (1)

$1 = x + y + 2z$ (2)

$2x - y = -9$ (3)

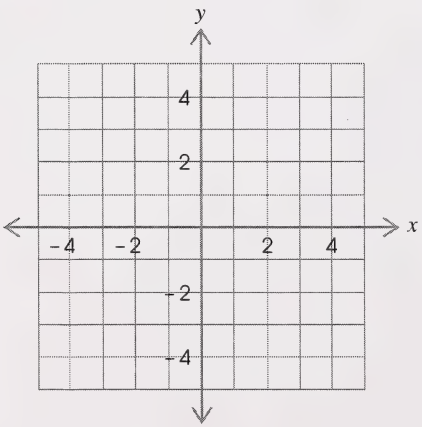
(5)

4. Using a linear inequality and appropriate restrictions on the variables, describe the graph as indicated by the shaded region and its boundaries.



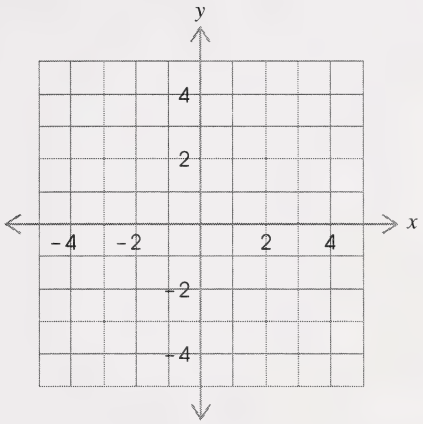
(4)

5. Graph $|x-1| \leq 1,\ y \leq 0$ on the grid. Use a test point from the region to check if your shading is correct.



(6)

6. Alice has gone to the hardware store to purchase two different kinds of cord she uses in kite construction. The first type of cord has a mass of 1.50 g per metre, and the second type has a mass of 2.00 g per metre. She intends to purchase no more than 6.0 g in total. If x represents the length of the first type of cord and y represents the length of the second type of cord, shade the region of the coordinate plane that represents the lengths of each type of cord she could purchase. State the inequalities that define this region.



(4)

7. In a showroom of a local dealership, there are just sportscars and motorcycles. One of the sales associates commented that there are 12 vehicles and 38 wheels in total. How many sportscars and how many motorcycles are there in the showroom? Show your work.

(2) **8.** Not all systems of linear equations have a solution. Give an example of a system of linear equations that has no ordered pair satisfying it. Explain your answer.

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Assignment Booklet
Module 2

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